



## **Frequently Asked Questions About Viral Hemorrhagic Fevers (VHFs)**

### **What are viral hemorrhagic fevers?**

The term viral hemorrhagic fevers (VHFs) refers to a group of illnesses that are caused by several distinct families of viruses. In general, the term "viral hemorrhagic fever" is used to describe a severe illness that affects multiple organ systems in the body.

Characteristically, the overall vascular system is damaged, and the body's ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage (bleeding); however, the bleeding is itself rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease.

### **How are hemorrhagic fever viruses grouped?**

VHFs are caused by viruses of four distinct families: arenaviruses, filoviruses, bunyaviruses, and flaviviruses. These families share a number of features:

- Their origin is an animal or insect host, called the natural reservoir.
- The viruses are geographically restricted to the areas where their host species live.
- Humans are not the natural reservoir for any of these viruses. Humans are infected when they come into contact with infected hosts. However, with some viruses, after the accidental transmission from the host, humans can transmit the virus to one another.
- Human cases or outbreaks of hemorrhagic fevers caused by these viruses occur sporadically and irregularly. The occurrence of outbreaks cannot be easily predicted.
- With a few noteworthy exceptions, there is no cure or established drug treatment for VHFs.

### **What carries viruses that cause viral hemorrhagic fevers?**

Viruses associated with most VHFs are zoonotic. This means that these viruses naturally reside in an animal reservoir host. For the most part, rodents are the main reservoirs for viruses causing VHFs. The multimammate rat, cotton rat, deer mouse, house mouse and other field rodents are examples of reservoir hosts. Arthropod ticks and mosquitoes serve as carriers for some of the illnesses.

### **Where are cases of viral hemorrhagic fever found?**

Taken together, the viruses that cause VHFs are distributed over much of the globe. However, because each virus is associated with one or more particular host species, the virus and the disease it causes are usually seen only where the host species live(s). Occasionally, people become infected by a host that has been exported from its native habitat.

## **How are hemorrhagic fever viruses transmitted?**

Viruses causing hemorrhagic fever are initially transmitted to humans when the activities of infected reservoir hosts or vectors and humans overlap. The viruses carried in rodent reservoirs are transmitted when humans have contact with urine, fecal matter, saliva or other body excretions from infected rodents. The viruses associated with arthropod vectors are spread most often when the vector mosquito or tick bites a human, or when a human crushes a tick. However, some of these vectors may spread virus to animals, livestock, for example. Humans then become infected when they care for or slaughter the animals.

## **Can viral hemorrhagic fever be transmitted from person to person?**

Some viruses that cause hemorrhagic fever can spread from one person to another, once an initial person has become infected. Ebola, Marburg, Lassa and Crimean-Congo hemorrhagic fever viruses are examples.

This type of secondary transmission of the virus can occur directly, through close contact with infected people or their body fluids. It can also occur indirectly, through contact with objects contaminated with infected body fluids.

## **What are the symptoms of viral hemorrhagic fever illnesses?**

Specific signs and symptoms vary by the type of VHF, but initial signs and symptoms often include marked fever, fatigue, dizziness, muscle aches, loss of strength and exhaustion.

Patients with severe cases of VHF often show signs of bleeding under the skin, in internal organs, or from body orifices like the mouth, eyes or ears. However, although they may bleed from many sites around the body, patients rarely die because of blood loss. Severely ill patient cases may also show shock, nervous system malfunction, coma, delirium and seizures. Some types of VHF are associated with renal (kidney) failure.

## **How are patients with viral hemorrhagic fever treated?**

Patients receive supportive therapy, but generally speaking, there is no other treatment or established cure for VHFs. Ribavirin, an anti-viral drug, has been effective in treating some individuals with Lassa fever. Treatment with convalescent-phase plasma has been used with success in some patients with Argentine hemorrhagic fever.

## **How can cases of viral hemorrhagic fever be prevented and controlled?**

With the exception of yellow fever and Argentine hemorrhagic fever, for which vaccines have been developed, no vaccines exist that can protect against these diseases. Therefore, prevention efforts must concentrate on avoiding contact with host species. If prevention methods fail and a case of VHF does occur, efforts should focus on preventing further transmission from person to person, if the virus can be transmitted in this way. Because many of the hosts that carry hemorrhagic fever viruses are rodents, disease prevention efforts include

- controlling rodent populations
- discouraging rodents from entering or living in homes or workplaces
- encouraging safe cleanup of rodent nests and droppings.

For hemorrhagic fever viruses spread by arthropod vectors, prevention efforts often focus on community-wide insect and arthropod control. In addition, people are encouraged to use insect repellent, proper clothing, bed nets, window screens and other insect barriers to avoid being bitten.

For those hemorrhagic fever viruses that can be transmitted from one person to another, avoiding close physical contact with infected people and their body fluids is the most important way of controlling the spread of disease. Barrier nursing or infection control techniques include isolating infected individuals and wearing protective clothing. Other infection control recommendations include proper use, disinfection, and disposal of instruments and equipment used in treating or caring for patients with VHF, such as needles and thermometers.

### **What needs to be done to address the threat of viral hemorrhagic fevers?**

Scientists and researchers are challenged with developing containment, treatment and vaccine strategies for these diseases. Another goal is to develop immunologic and molecular tools for more rapid disease diagnosis, and to study how the viruses are transmitted and exactly how the disease affects the body (pathogenesis). A third goal is to understand the ecology of these viruses and their hosts in order to offer preventive public health advice for avoiding infection.

The Centers for Disease Control and Prevention (CDC) classifies agents with recognized bioterrorism potential into three categories: A, B and C. VHFs are Category A agents.

#### Category A agents

- pose the greatest possible threat to the public's health
- may spread across a large area
- require advance planning to protect the public's health.

### **What is the public health system in New Jersey doing to prepare for a possible biological attack?**

New Jersey and the CDC are working together to prepare for all potential health hazards, including bioterrorism.

#### Activities include:

- Developing plans and procedures to respond to an attack
- Training and equipping emergency response teams, gathering samples and performing tests to help state and local governments control infection
- Educating healthcare providers, the media, and the general public about what to do in the event of an attack
- Working closely with local health departments, veterinarians and laboratorians to watch for suspected cases of bioterrorism
- Working with hospitals, laboratories, emergency response teams and healthcare providers to make sure they have the supplies they need in case of an attack.

## **Where can I get more information?**

- Your healthcare provider
- Your local department of health
- The New Jersey Department of Health and Senior Services

Website – [www.nj.gov/health](http://www.nj.gov/health)

DHSS Communicable Disease Service at (609) 588-7500

- CDC

[www.bt.cdc.gov/agent/vhf](http://www.bt.cdc.gov/agent/vhf)

1-800-CDC-INFO (4636) for assistance in English and Spanish

TTY 1-888-232-6348

E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)